CASE REPORT

Single-Site Laparoscopic Management of a Large Adnexal Mass

Dennis R. Scribner Jr, MD, Eduardo Lara-Torre, MD, Patrice M. Weiss, MD

ABSTRACT

Introduction: Single-site laparoscopy is gaining acceptance in many surgical fields including gynecology. The purpose of this report is to demonstrate the technique and outcome for removing a large adnexal mass through a single site.

Case Description: A 41-y-old female was referred to gynecology oncology for increased abdominal girth for 3 mo. An ultrasound confirmed a benign-appearing, 37-cm left adnexal mass. The mass was removed through a single-site laparoscopic incision with the aid of drainage and a morcellator. The operating time was 84 min. The patient was discharged 2 h and 35 min later with full return to normal activity in 5 d.

Conclusion: Large, benign-appearing adnexal masses can be managed safely with superior cosmetic results using single-site laparoscopy.

Key Words: Single port, Pelvic mass, Laparoscopy, Morcellator

INTRODUCTION

With improved technology, training, and experience, minimally invasive surgical techniques are now the standard approach for many gynecological procedures. Currently, single-site laparoscopic surgery is gaining acceptance for gynecologic surgical management of benign adnexal masses, hysterectomies, and even oncologic procedures.[1] Single-site laparoscopy has the potential for less pain, fewer postoperative complications, and improved cosmetic results. A retrospective study comparing single-site laparoscopic hysterectomies versus traditional laparoscopy showed those who underwent single-site surgery had less intraoperative blood loss, shorter hospital stay, earlier diet intake, and lower pain scores immediately after surgery.[2] Several case reports of adnexal surgery have been published with successful single-site laparoscopic management of masses as large as 12cm.[3,4] The purpose of this case report is to present the management of a large 37-cm benign adnexal mass with single-site laparoscopy and to document the safety and feasibility of single-site laparoscopic surgery with the use of a tissue morcellator.

CASE REPORT

A 41-y-old woman (gravida 2, para 2) presented to the gynecology clinic with complaints of abdominal pain for 3 mo. The pain had gotten worse and was associated with increased abdominal girth, early satiety, and difficulty breathing. The patient had not had a gynecologic examination within the last 3 y and did not have any surgical history. The patient's body mass index was 34.4 kg/m^2. Abdominal examination revealed a large mass 10 cm above the umbilicus. Her serum pregnancy test was negative. An ultrasound confirmed the mass to be 37cm in diameter and revealed the contents to be homogeneous with clear fluid. There were no solid components, excrescences, or ascites, and her cancer antigen 125 level was normal. The patient was referred to gynecology oncology for surgical management.

A single-site laparoscopic left salpingo-oophorectomy with morcellation was performed without complications and minimal blood loss. Once anesthesia was induced, the patient was placed in the dorsal lithotomy position

Department of Obstetrics and Gynecology, VA Tech Carilion School of Medicine, Roanoke, VA, USA (all authors).

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Address correspondence to: Eduardo Lara-Torre, MD, Department of Obstetrics and Gynecology, VA Tech Carilion School of Medicine, 1906 Belleview Avenue, Roanoke, VA 24018, USA. Telephone: (540) 266-6349, Fax: (540) 983-1192, E-mail: eltorre@carilionclinic.org

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Figure 1. Abdominal appearance prior to incision.

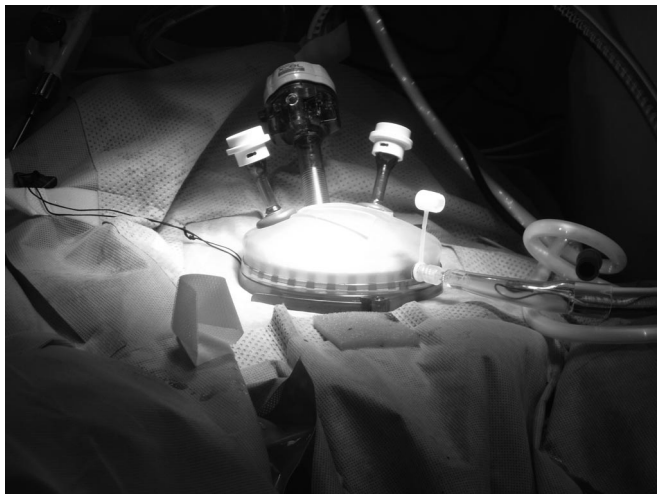

Figure 2. Placement of single site GelPort trocar™ (Applied Medical Systems Rancho Santa Margarita, CA).

within Allen stirrups and prepped and draped in the usual fashion **(Figure 1)**. A Foley catheter was placed in her bladder, and a uterine manipulator in her uterus. A 2-cm skin incision was created within her umbilicus and carried out through the fascia into the peritoneal cavity where the large ovarian cyst was identified. A 12-mm trocar was placed directly into the ovarian cyst. The suction irrigator was introduced through the trocar sheath, and 5.5 L of clear fluid was extracted. This step decompressed the cyst, allowing for proper placement of the single GelPort trocar (Applied Medical Systems, Rancho Santa Margarita, CA). Three ports for the single-site system where utilized: one 12-mm port to accommodate the 10-mm bariatric laparoscope and two 5-mm trocars for the Harmonic Ace (Ethicon Endosurgery, Cincinnati, OH), along with a standard straight laparoscopic grasper **(Figure 2)**. The abdomen and pelvis were inspected and found to be normal. The Harmonic Ace was used to successfully disconnect the left ovary, tube, and cyst from its blood supply and attachments to the left pelvis and uterus. Given the benign nature of this cyst, washings were not performed, and the cyst fluid was not sent to pathology for cytologic evaluation. An initial attempt was made to deliver the left adnexa out of the umbilical incision for external morcellation. Due to the large amount of tissue that had to be morcellated, external morcellation was abandon after 10 min and replaced with internal morcellation. The Gynecare Morcellex Tissue Morcellator (Ethicon Endosurgery) was then placed through the Gelpoint trocar, replacing the 12-mm trocar, and a 5-mm, zero-degree laparoscope was used for visualization. Intraoperatively, the ovary was inspected and found to be free and smooth walled exteriorly, and once an incision was made, the inside of the ovary was then inspected with the camera and was free of any nodularity, solid components, or excrescences. Therefore, the fluid that was saved was discarded, and the morcellated ovary was not sent for frozen histologic evaluation. With adequate visualization throughout the process, the left adnexa was morcellated into 2 pieces and taken out of the abdomen in less than 1 min. The left ovarian tissue was grossly inspected by pathology and found to be benign. The pelvis was inspected and found to be free of tissue fragments, remaining organ injury, or active bleeding. The pelvis was irrigated, and the instruments and CO_2 gas were removed. The anterior rectus fascia was closed with a running 0-polyglactin suture. The skin was closed with 4–0 monofilament absorbable suture and covered with topical skin adhesive. Local anesthesia was applied postoperatively using 10 mL bupivacaine. **Figure 3** shows the abdomen after wound closure. Total time in the operating room was 124 min, with 84 min of actual operating time. The patient was discharged when she met routine outpatient surgical criteria 2 h and 35 min later without the need for narcotics. The pathology revealed a benign serous cystadenoma. The patient was seen on postoperative day 14 with a well-healed umbilical incision and reported being back to normal activities since 5 d after the surgery.

DISCUSSION

The use of single-site laparoscopic incisions for gynecologic surgery dates back to 1969 when Wheeless[5] first reported on the use of one incision to perform female sterilizations. Pelosi and Pelosi[6] in 1992 published the first case of a supracervical hysterectomy through a single

Figure 3. Final appearance after closure.

laparoscopic incision, and since then a case series in gynecology has been published reporting ovarian cystectomies; management of ectopic pregnancies, benign adnexal masses, and hysterectomies; and gynecologic oncology staging.[1–4] The published gynecologic literature however lacks randomized clinical trials of single-site laparoscopic procedures. The largest published series of adnexal mass management through a single site included 24 patients with masses that ranged in size from 3cm to 12cm. The average operating room time was 70 min, and patients were restricted to a body mass index <30 kg/m^2.[3] The only comparative study was from Seoul, Korea, where the authors retrospectively reviewed their experiences performing hysterectomies through a single site versus traditional laparoscopy. Their analysis showed less blood loss, shorter length of hospital stay (3.4 versus 4.3 d), and less postoperative pain within the first 24 h in favor of the single-site group.[2] The only published literature describing single-site morcellation involved supracervical hysterectomies, and the morcellation was performed through the dilated cervical stump.[7]

The potential advantages of single-site laparoscopy include improved cosmetic results, less pain, and potentially decreased recovery time. Fewer incisions could reduce the risks for laparoscopic incisional hernias, bleeding, wound separation, and infection. The larger single incision compared to traditional laparoscopic incisions also makes for easier removal of normal to slightly enlarged adnexal masses, with less need for external morcellation. Single-site laparoscopy is not without its difficulties; however, instrument triangulation, collision, and limited degrees of freedom are a significant deterrent to its use. Other potential problems include poor ergonomics, a long learning curve, and the lack of proven clinical benefits as reasons for not adopting this new technology.

To help alleviate some of the triangulation pitfalls, angulated and articulating instruments as well as laparoscopes have been developed. We did not have access to this advanced technology. Traditional instruments and laparoscopes were utilized throughout the entire case. It is our preference to use the GelPort trocar (Applied Medical Systems) for single-site laparoscopy. It allows for the versatility of placing trocars through the gel to optimize space between the cannulas, limiting instrument collision. The movements of the surgical instruments are less subjected to triangulation as they rotate around the fulcrum point within the gel.

This case report is the first to document successful removal of a large, benign ovarian cyst through a single site, as well as the first to show the safety and feasibility of the use of a morcellator through a single incision. To advocate this approach, surgeons must determine preoperatively whether a low risk for a malignancy is present. Morcellating cancerous tissue with spillage of malignant cells into the peritoneum can be detrimental to the patient's survival as well as alter the need for postoperative chemotherapy. Patients with unilocular cysts without any other risk factors have been shown to be at minimal risk for cancer and ideal candidates for a laparoscopic surgical approach.[8]

It is our experience that adnexal surgery lends itself to single-site laparoscopy with less of a learning curve than more complex procedures. Morcellation of the adnexa, fibroids, and/or uteri can be done safely with a 5-mm laparoscope visualizing the morcellation process throughout its entirety to prevent complications. This process facilitates successful completion of procedures as well as increases surgical efficiency with more timely removal compared to external morcellation of large masses, as demonstrated in this case. We were successful despite this patient being obese with surgical times comparable to those of previous reports. This patient benefited from avoiding a laparotomy, experiencing limited pain without a narcotic requirement after discharge, and a quickly returning to normal activity. A single, randomized clinical trial published in the literature in laparoscopic cholecystectomies showed single-site surgery resulted in lower pain scores but slightly longer operating room times (49 versus 37 min) compared to traditional laparoscopy.[9] Future clinical trials will provide more definitive data on whether single-site laparoscopy provides these potential clinical benefits for gynecologic patients. This case report

documents the feasibility and potential safety of utilizing single-site laparoscopy and morcellation for patients with large benign adnexal masses.

CONCLUSION

Large, benign-appearing adnexal masses can be managed safely with superior cosmetic results using single-site laparoscopy.

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